



1966

PRODUCT SUMMARY

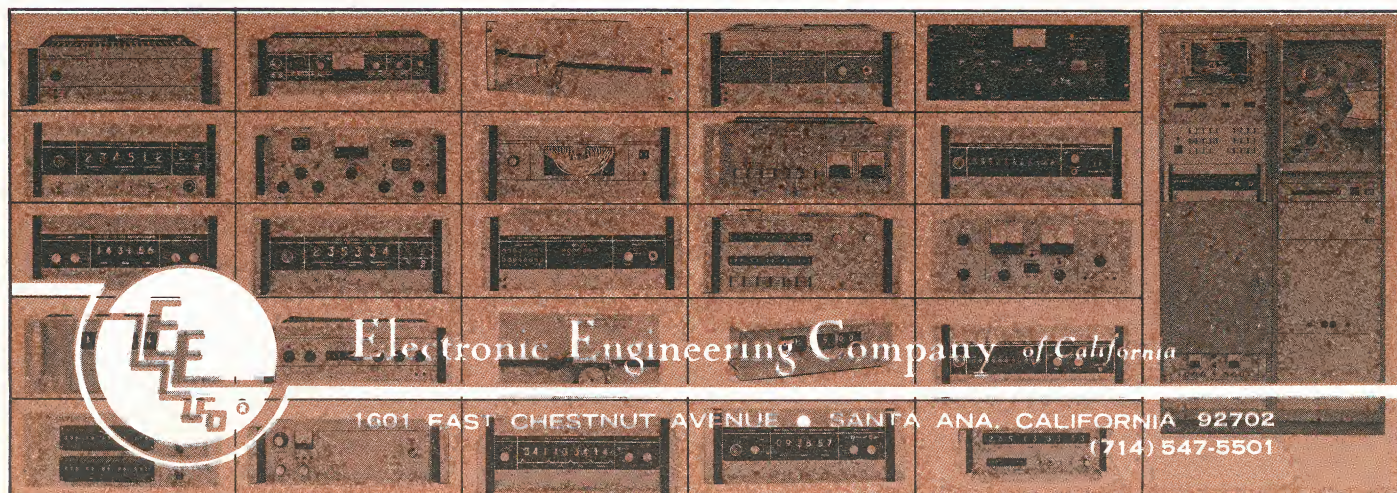


TIMING

DATA PROCESSING

TAPE READERS

SYSTEMS



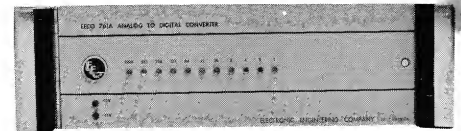
Electronic Engineering Company of California

1001 EAST CHESTNUT AVENUE • SANTA ANA, CALIFORNIA 92702
(714) 547-5501

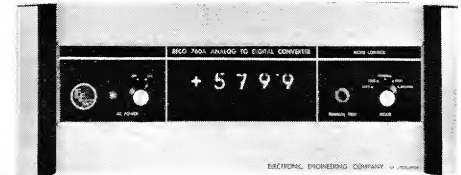
DATA PROCESSING

ANALOG TO DIGITAL DIGITAL TO ANALOG ANALOG MULTIPLEXERS

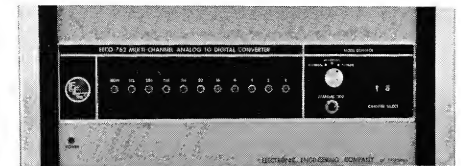
Analog-to-Digital Converter - Up to 11 bits binary or 3 decimal digits + sign 41 K.C. conversion rate.	EECO 761A
Analog-to-Digital Converter - Up to 15 bits binary or 4 decimal digits and sign. Optional decimal display. Many other options.	EECO 760A
Multi-Channel ADC - 10 to 100 input channels. Up to 14 bit binary or 4 BCD. 100 megohm input impedance. Selectable channel display.	EECO 762
Multi-Channel Digital-to-Analog Converter - Accepts digital inputs and produces up to 100 separate analog outputs.	EECO 764
Analog Multiplexer - 10 to 100 inputs, 100 megohm input impedance. Selectable ADC display gate. With or without input patch.	EECO 765



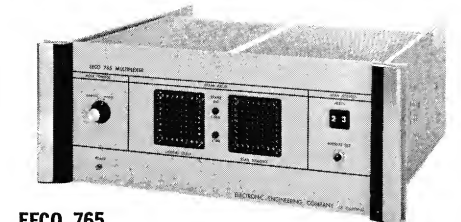
EECO 761A



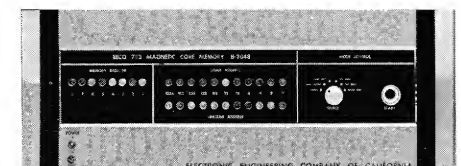
EECO 760A - with optional decimal display



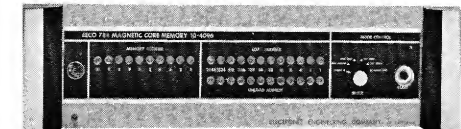
EECO 762



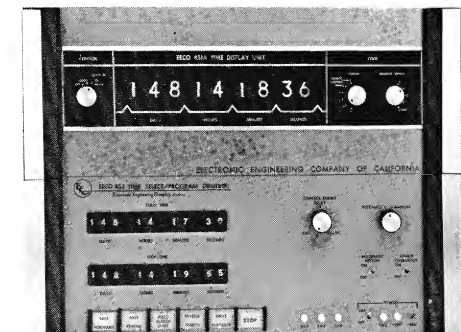
EECO 765



EECO 783



EECO 788



EECO 851A/852



EECO 858A

MAGNETIC CORE MEMORIES

8 to 18 level. 256 to 4096 characters. Built-in test features:	5 μ sec	< 2 μ sec
Random access.	EECO 781	EECO 786
Sequential access.	EECO 782	EECO 787
Sequential interlace	EECO 783	EECO 788

SEARCH AND CONTROL SYSTEMS

for Magnetic Tape Recorders

Search and Control Systems automatically control analog tape recorders to search at high speed in either direction for selected portions of data on magnetic tape. The data on the tape is identified by a time code. This time code is displayed during search and playback.	
Automatic search system. Reads IRIG Formats A, B and C, NASA 36 and 28-bit and other BCD time codes. Selection of time code formats by front panel switch and simple patch connector change. Decoder unit for AMR D-5 is among standard options.	EECO 851A EECO 852
Automatic Universal search system. Reads IRIG, NASA, AMR, PMR, and other time codes. Selection of time codes by plug-in decode modules.	EECO 835
Combination time code generator and automatic search and control. Generates and reads 20-bit, 24 hour time code, modified IRIG B Format. Simultaneous slow code for graphic recorders.	EECO 858A EECO 859

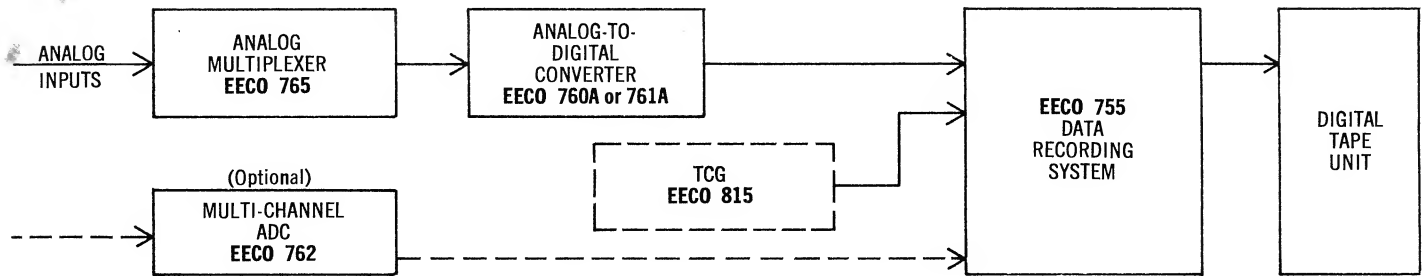
TIME DISPLAY UNITS

for displaying time recorded on magnetic tape

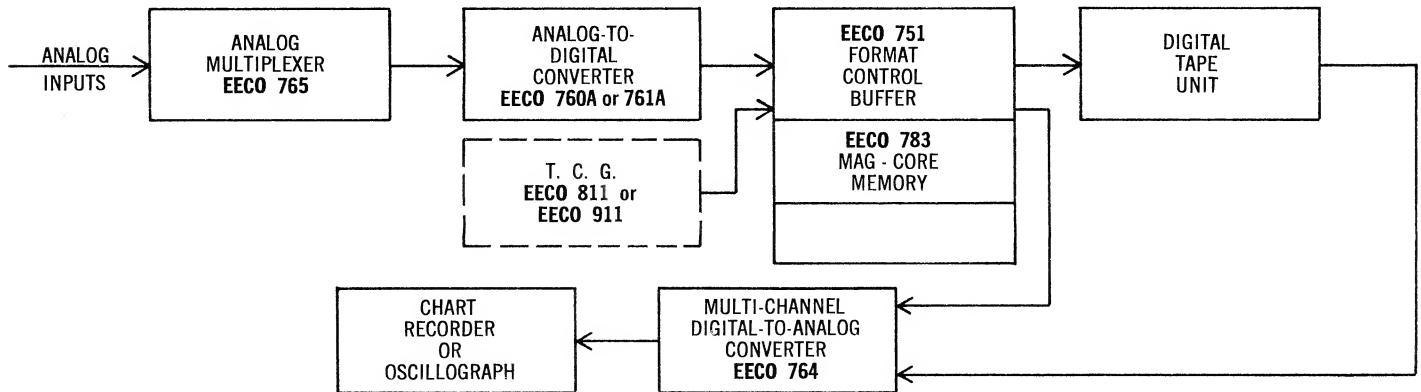
These units read and display time from magnetic tape units operating at high or low speed in either forward or reverse direction. Used for data searching with manual control of the tape unit.	
Displays IRIG, NASA and other BCD time codes. AMR decoder available. Optional input filters and fail/safe oscillator	EECO 851A
Displays IRIG, NASA, AMR, PMR and other time codes using plug-in decode modules.	EECO 855

DATA PROCESSING

Typical Systems using EECO Products. EECO supplies the whole system or the parts



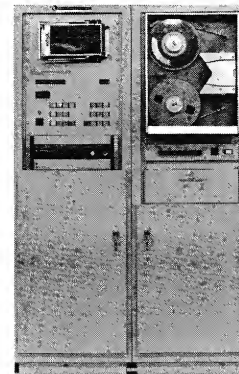
LOW SPEED DATA SYSTEM



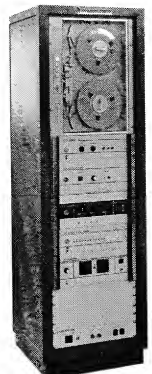
HIGH SPEED DATA SYSTEM

STANDARD EECO DATA SYSTEMS

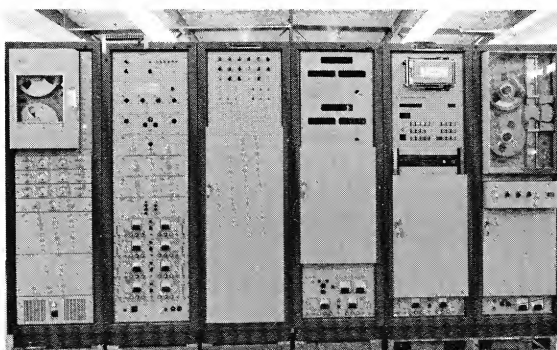
Format Control Buffer. 36-bit digital or analog inputs converted to IBM computer tape.	EECO 751-1
Format Control Buffer. Same as 751-1 but uses IBM 729 tape unit.	EECO 751-2
Format Control Buffer. 18-bit digital or analog inputs converted to IBM computer tape.	EECO 751-3
Format Control Buffer. 6-bit digital or analog inputs converted to IBM computer tape. Sequential memory.	EECO 751-4
Data Recording System. Multiplexes analog inputs to IBM computer tape. Incremental tape unit.	EECO 755



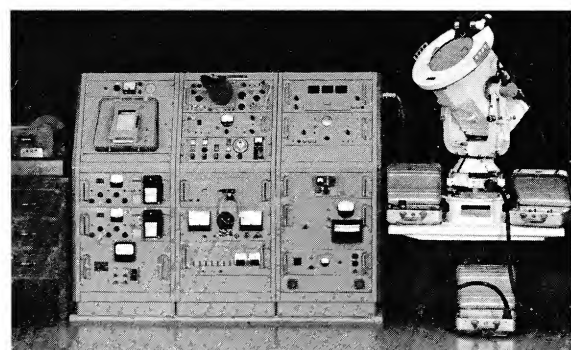
EECO 751



EECO 755



Special Data Processing System using EECO products - Air Force



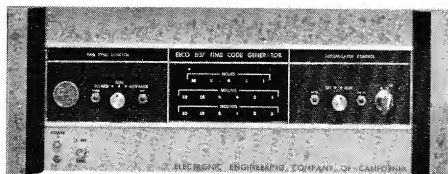
Ballistic Camera Synchronization System

TIME CODE GENERATORS

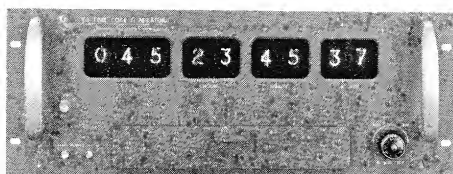


EECO 911

- All silicon integrated circuit unit
- Any 5 time codes simultaneously
- Simple time setting with thumbwheel switches
- 5 1/4" panel
- Operates from 115 VAC, 50-400 Hz or 12 VDC
- Many standard options available
- 1 pps, 10 pps, 100 K Hz and 1 M Hz outputs
- Stability 2×10^{-9} per day.



EECO 807



EECO 811



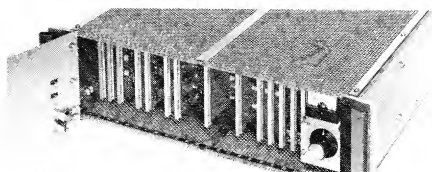
EECO 816



EECO 858A



EECO 859



EECO 871

Model Number	Codes	Pulse Rates	Comments
EECO 807	AMR B1/B2, C1/C2, D1/D5	7 Rates 1 pps to 100K pps	
EECO 808	EECO 803 or XR-3 1 second frame, 25 pps scan rate, 250Hz carrier	None	
EECO 811	Up to four IRIG codes	1 M Hz 10 pps 1 pps	Special codes available
EECO 812	1 to 3 standard NASA Formats	1 M Hz 1 pps	
EECO 815	Hours, minutes, seconds parallel only	6 Rates 1 ppm to 100 pps	60 Hz frequency source
EECO 816	Hours, minutes, seconds 1 sec or 10 sec frame 25 pps or 5 pps scan rate	6 Rates 1 ppm to 100 pps	EECO 815 with serial output
EECO 817	Hours, minutes, seconds parallel only	5 Rates 1 pps to 10K pps	External 100 Kz frequency source

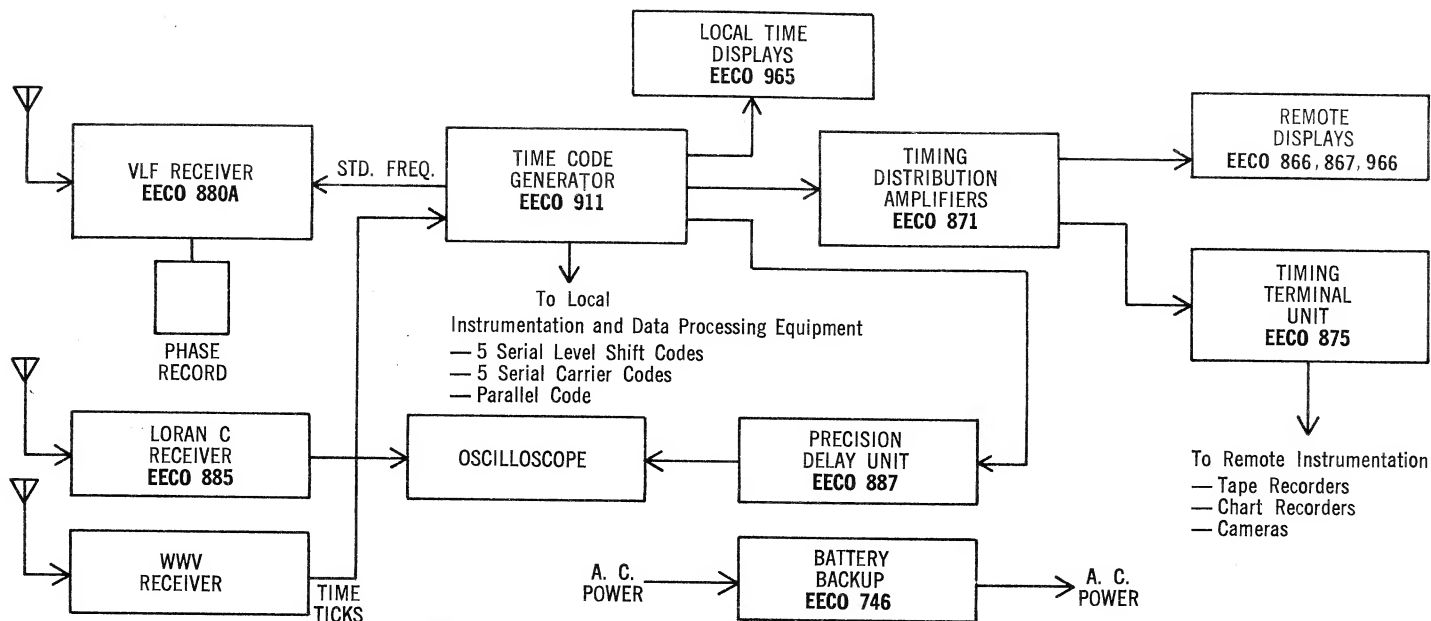
TIME CODE GENERATOR / READER

Generates and displays 20-bit 24 hour time code. Reads and displays hours, minutes and seconds portion of IRIG B format from magnetic tape. Simultaneous slow code for graphic recorders.

EECO 858A	Combination TCG and Time Display.	Modified IRIG B hours, minutes, seconds. 20-bit BCD Slow Code: 5 sec or 1 min frame 10 pps or 1 pps scan rate	Pulse Rates: 1000, 100, 10, 1 pps
EECO 858A EECO 859	Combination time code generator and automatic search and control. Generates and reads 20-bit, 24 hour time code, modified IRIG B Format. Simultaneous slow code for graphic recorders.		

TIMING SYSTEM AUXILIARY EQUIPMENT

EECO 865 EECO 866 EECO 867 EECO 869	Remote Time Display Units. Wall or rack mounting units to display time, input either parallel or serial time code.		
EECO 871	Universal Timing Amplifier. Multiple amplifier for all time codes and pulse rates. Includes Neon Driver output.		
EECO 875	Terminal Timing Unit. Modifies basic timing codes into variety of special codes, pulse rates and amplified outputs for use by various instrumentation.		
EECO 876	Slow Code Scanner. Generates slow code rates by scanning EECO 875 or Time Code Generator.		
EECO 886 EECO 887	Precision Time Delay. Delays 1 pps sync pulses in 1 microsecond steps. For time synchronization.		
EECO 32575	Count Down Clock. Displays the time in hours, minutes and seconds before zero or "fire" time and after zero time. 5 digits and sign.		
EECO 746-1 EECO 746-2	Battery Backup Power Supply. Provides continuous ac sine wave power regardless of ac power interruption. Uses 24 volt battery.		300 VA 500 VA



TYPICAL TIMING SYSTEM USING EECO PRODUCTS

TIME CODE FORMATS

Code Type	Bits	Time Indicators	Code Frame Length	Code Scan Rates	Code Carrier Frequency (cps)	
IRIG A	34 and 17 bit binary seconds	Days, hours, minutes, seconds, 1/10 seconds	0.1 sec.	1000 pps	10 kc	17 bit binary indicates time of day. Up to 27 control bits can be added
IRIG B	30 and 17 bit binary seconds	Days, hours, minutes, seconds	1 sec.	100 pps	1 kc	17 bit binary indicates time of day. Up to 27 control bits can be added
IRIG C	23	Days, hours, minutes	1 min.	2 pps	100 cps * or 1 kc	Up to 27 control bits can be added
IRIG D	16	Days, hours, minutes	1 hour	1 ppm	100 cps * or 1 kc	Up to 9 control bits can be added
IRIG E	26	Days, hours, minutes, seconds	10 sec.	10 pps	100 cps * or 1 kc	Up to 27 control bits can be added
NASA 36 bit	36	Days, hours, minutes, seconds	1 sec.	100 pps	1000 pps	4 I.D. bits
NASA 28 bit	28	Days, hours, minutes	1 min.	2 pps	100 cps	4 I.D. bits
NASA 20 bit	20	Days, hours	1 hour	1 ppm	100 cps	4 I.D. bits
AMR B1/B2	17	Hours, minutes, seconds	20 sec.	1 pps	100 cps * or 1 kc	
AMR C1/C2	17	Hours, minutes, seconds	1 sec.	20 pps	100 cps * or 1 kc	
AMR D1/D5	17	Hours, minutes, seconds	1 sec.	100 pps	100 cps * or 1 kc	

Other Available Codes:

- Eglin Test Range
- EECO 803/VR3/1892
- Parset
- NAFEC
- Others quoted on request.

* Switch - selectable on code cards.

VLF RECEIVERS AND SYNTHESIZER

for Synchronizing Timing Systems

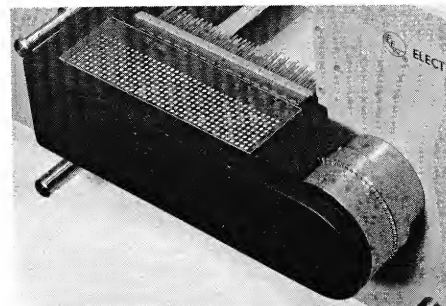
Compares and corrects output frequency of local oscillator with reference to VLF carriers. Plots frequency deviation. Tunes from 10 kc to 30 kc and 60 kc. Electronic servo. Variable tracking rate.	EECO 880A
Similar to EECO 880A except modular construction for front access.	EECO 881M
Loran-C Receiver. Fixed tuned to 100 kc. Provides accurate "on time" signal.	EECO 885
Frequency Synthesizer Coherent Outputs 1 kc to 100 kc in 100 cps steps. Sine, square, and triangular wave form outputs.	EECO 883

ELECTROMECHANICAL PRODUCTS

PUNCHED TAPE BLOCK READER

5000-Series Photoblock Readers

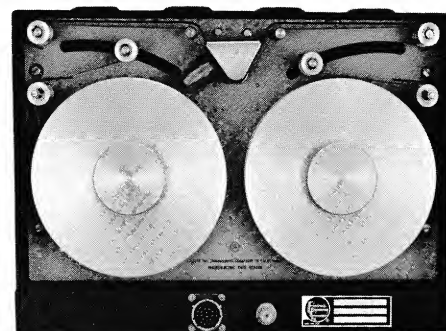
Photoelectric readout. Up to 320 bits per frame. Many output options.	EECO 5000
EECO 5000-Series reader compatible mechanically and electrically with CTI Cable and Circuit Tester systems. Available with or without verifier lights.	EECO 5210 EECO 5310 (with lights)



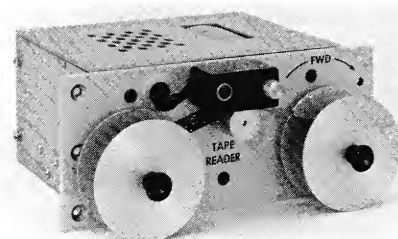
EECO 5140 — 320 bit Read Head

RUGGEDIZED MILITARY PUNCHED TAPE READERS

Photoelectric block reader — up to 160 bits/frame — up to 12 frames/sec. —40°C to +55°C.	EECO 2300 and EECO 2400
Photoelectric single line reader. 130 characters/sec. —40°C to +85°C— 10 g vibration to 500 cps.	EECO 3002



EECO 3002



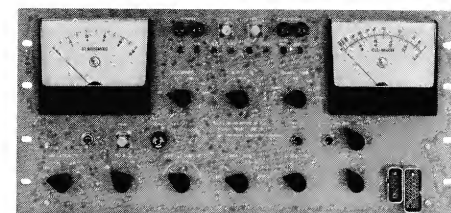
TP 531 W1

SINGLE LINE PUNCHED TAPE READERS

Single-line reader for mobile application. 15 characters/sec — 3 3/8" x 7 3/4" x 6 1/2". 7 1/2 lbs.	TP 531 W1
Single-line, slow speed reader. 30 characters/sec. Bidirectional.	TP 551



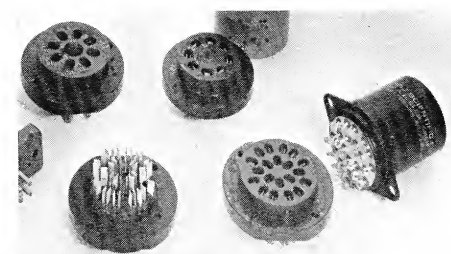
TS 400



RT 905

MISCELLANEOUS

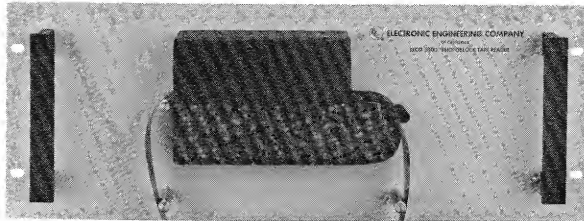
Paper Tape Spooler. Bi-Directional — 8" reels — up to 15 ips — 1200 foot tape capacity.	TS-400
Relay Tester. For rapid test of pull-in and drop-out voltage and current, contact resistance and coil resistance, of relays.	RT 905
Test Sockets. Dual contact sockets for all standard relays using solder type terminals. For quick and accurate testing.	Ask for Catalog AS-3



ADAPTER SOCKETS

AUTOMATIC PROGRAMMING WITH PUNCHED TAPE

BLOCK READING



EECO 5000

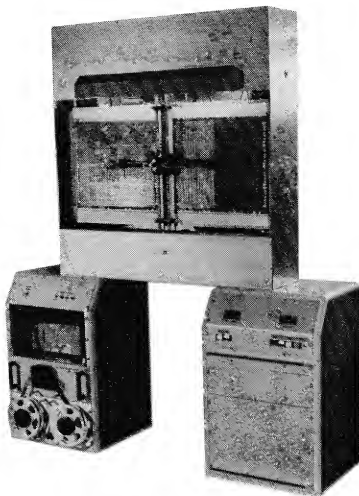
Automatic program control using the block concept provides unique advantages. Large blocks or frames of data with up to 40 lines of 8 bits are read simultaneously by block readers with an output of up to 320 bits of information. With such aggregates of information directly available, complex control functions are accomplished without special circuitry to accumulate data in a register or other storage device. Additionally, identification of data by simple position within the block enables the reader itself to perform addressing and address decoding without extra routing and address circuits.

Freedom from intermediate accumulation, storage circuitry, routing, and address circuitry enable block reader outputs to be used directly for

- Simplifies system design
- Accomplishes complete test with one block
- Identifies function of data by position in block
- Eliminates additional addressing
- Provides straightforward programming by blocks

control functions of a complex system. Simplifying the system design provides not only for more reliable operation, but also a system which is easier to operate and maintain, and is therefore of prime importance from the standpoint of economy.

The most significant advance in block tape reading is the photoblock introduced by EECO in 1965. All of the advantages of photoelectric reading reliability are now available in a block type reader. The system designer can now employ block programming techniques without making the sacrifices in accuracy of his system which were necessary with mechanical readers. With a completely solid state system, the EECO Photoblock is a state-of-the-art device for your automatic system.



Arvin Circuit Tester

A typical application for a Block Reader is in a comparison system. Such a system requires that information from two sources be stored in parallel, available for comparison. A parameter from one source is advanced until it agrees with information stored at the other source (the Block Reader). At this instant, a signal is given to perform the instructions contained in the rest of the tape block. This type of operation is found in automatic traffic control systems.

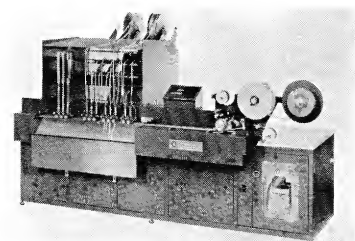
The instructions transmitted are in the form necessary to select one of several pre-pro-

APPLICATIONS

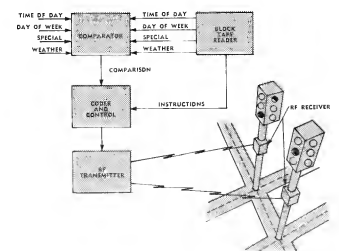
- Automatic Test Equipment • Flow Systems
- Ground Support Systems • Traffic Regulation
- Machine Tool Control • Power Transmission Control
- Process Control
- Inventory Control

grammed timing interval functions contained in each traffic regulating station. These are generally motor-driven, cam-operated switches operating the traffic signals at various flow pattern intervals.

In this application, complete blocks of information are maintained as long as necessary on the output of the reader. No other storage media is required. The information can be analyzed directly; there is no need to scan or search tape line by line.



Universal Instruments Component Sequencer



TRAFFIC CONTROL



HISTORY

EECO was founded as a partnership in 1947. Since that time, EECO has emphasized the design and manufacture of high-quality instrumentation and data processing equipment. In 1951 the company was incorporated in the State of California. In 1954 the Engineered Electronics Company was organized as a separate division to produce circuit modules and other electronic components and sub-assemblies.

FACILITIES

The Electronic Engineering Company is located at Santa Ana, California, in a modern 42,000 square foot building. Facilities include engineering labs, drafting department, metal shop, assembly shop, graphic arts, quality control and publications.

The Engineered Electronics Company division is located in a 25,000 square foot building on the same 19-acre tract.

QUALITY CONTROL

Quality and reliability of EECO products represent a major effort on the part of EECO's management. The Quality Control Department reports directly to the Vice President - Operations.

EECO's Quality Control System meets the requirements of MIL-Q-9858A, MIL-C-45662A, MIL-I-45208A and NPC-I-45208A and NPC-200-3. Our Q. C. procedures have been approved by the Defense Contract Administration Services and numerous prime defense contractors. Special Quality Control requirements in addition to those above can be implemented to meet customers requirements.



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